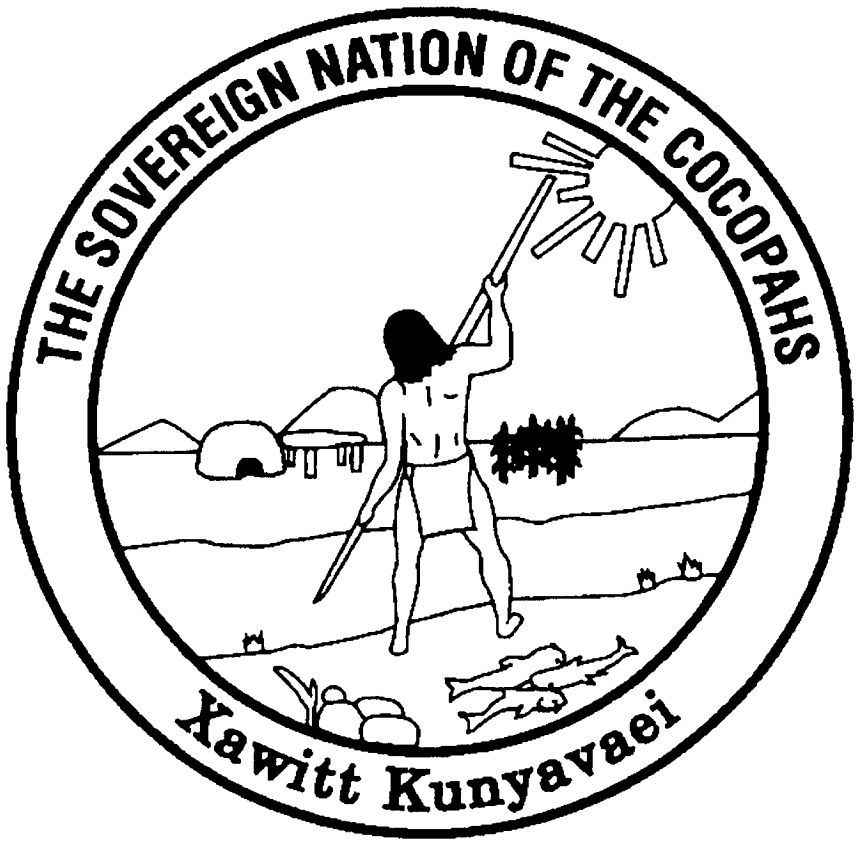

UNIFIED WATERSHED ASSESSMENT

AND

WATERSHED RESTORATION PROJECT PRIORITIES

FOR THE

COCOPAH INDIAN RESERVATION

Environmental Protection Office
The Cocopah Indian Tribe
W. County 15th & Ave. G
Somerton, Arizona

March 1999

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1.0 Background

1.1 Purpose

The purpose of this report is to respond to the Clean Water Action Plan released by President William Clinton and Vice-President Albert Gore on February 19, 1998 (Environmental Protection Agency 1998) by developing a unified watershed assessment (UWA) of waterbodies within areas of the Cocopah Indian Tribe's jurisdiction. The Clean water Action Plan places watersheds within one of four categories (**Table 1**).

Table 1. Watershed Categories for the Unified Watershed Assessment

Watershed Category	UWA Criteria
I	Watersheds in need of restoration due to impaired water quality or not meeting other natural resource goals
II	Watersheds with good water quality that meet all natural resource goals, but need preventive action to sustain water quality and aquatic ecosystems
III	Watersheds with pristine or sensitive areas that need an extra measure of water quality protection, but that are not impaired
IV	Watersheds where more information is needed in order to categorize them

1.2 Tribal Resources

The Cocopah Indian Tribe is a federally recognized Indian Tribe (Federal Register, Vol. 51, No. 132, July 10, 1986) occupying 7,772 acres of land along the Colorado River near Yuma, Arizona (Arizona Department of Commerce 1998). The reservation is located within three separate land areas: East Cocopah, West Cocopah, and North Cocopah (**Figure 1**). A Summary of tribal resources for the Cocopah Indian Reservation is provided in **Table 2**.

1.3 Water Resources

The Cocopah Indian Reservation has 14.3 border miles of the perennial streams, 32.0 miles of canals, >7.5 miles of ditches, ~1395 acres of wetlands, and three lakes. The Colorado River is the primary water body that exists on the Cocopah Indian Reservation, with 11.2 miles of the river

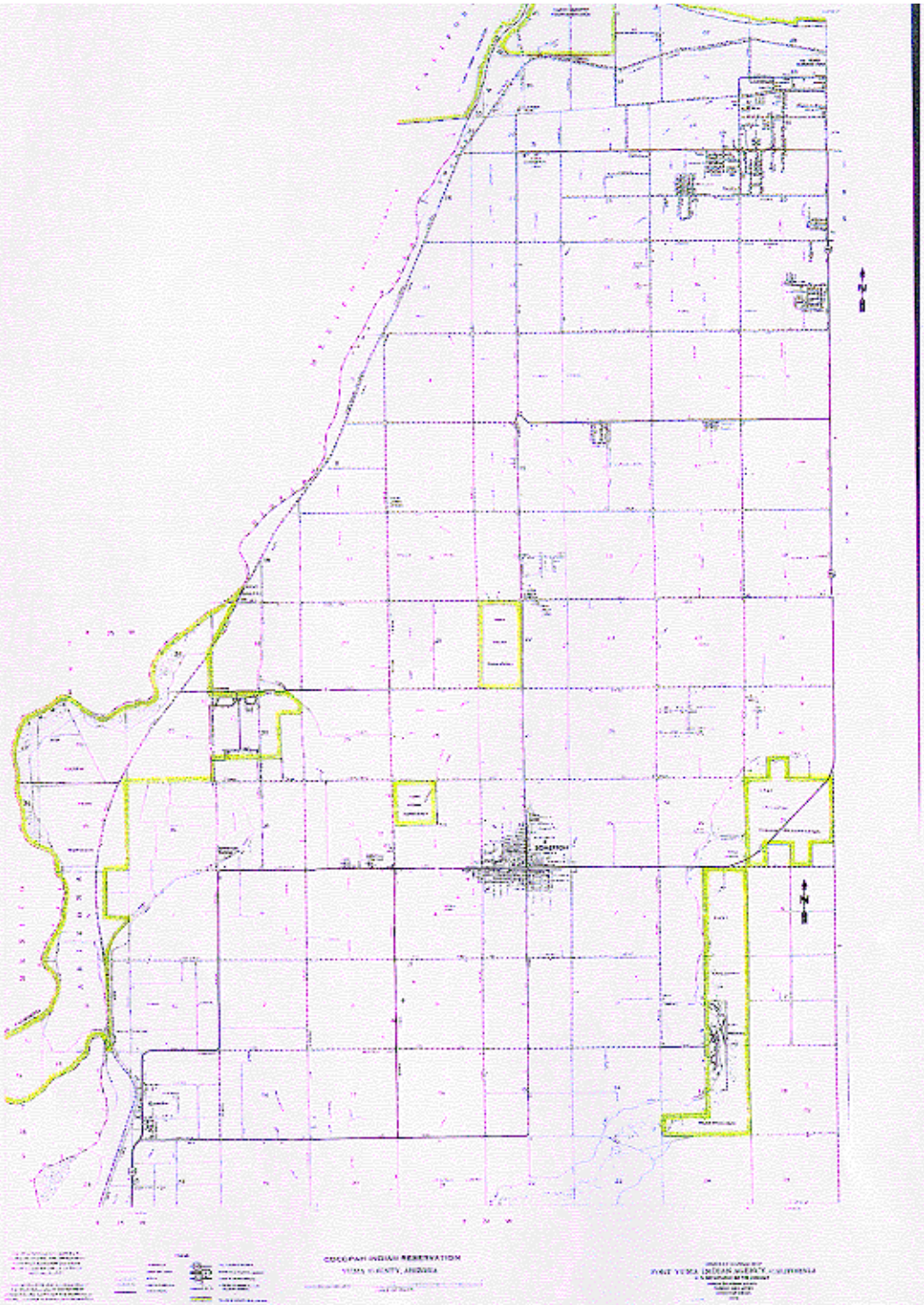
COCOPAH INDIAN RESERVATION
YUMA COUNTY, ARIZONA

Table 2. Atlas of Tribal Resources for the Cocopah Indian Reservation

Topic	Value
Surface area of Tribal Lands (acres)	6150
Tribal population residing on these lands	437
Total miles of rivers and streams on Tribal lands - Miles of perennial rivers/streams (subset) - Miles of intermittent (non-perennial) streams (subset) - Miles of ditches and canals (subset) - Border miles of shared rivers/streams (subset)	53.8 0 ? 39.5 14.3
Number of lakes/reservoirs/ponds on Tribal lands	3
Acres of lakes/reservoirs/ponds on Tribal lands	~1.7
Acres of freshwater wetlands on Tribal lands	~1395
Acres of tidal wetlands on Tribal lands	0
Square miles of estuaries/harbors/bays	0
Miles of ocean coast	0
Miles of Great Lakes shore	0

bordering the Quechan Indian Reservation and 3.1 miles of river bordering Mexico. Lengths of non-perennial streams are not currently known (Table 2). Photographs of selected waterbodies are presented in Appendix A.

Ground water occurs on the Cocopah Indian Reservation in sedimentary deposits, which are thought to be hydraulically connected to form a single aquifer. There are three zones within the aquifer which are, in descending order, the upper fine-grained zone, the coarse-gravel zone, and the wedge zone. The Algodones fault forms a partial to nearly complete barrier to ground water movement in areas nearby North Cocopah and East Cocopah.

The primary use of ground water within the Cocopah Indian Reservation are domestic water supply through individual domestic water supply wells and crop irrigation. There are seven wells comprising four public water systems (PWS) systems that use ground water as a drinking water source within the reservation. Ground water is also pumped for discharge to ditches in an effort to lower shallow water tables beneath crop lands.

2.0 USGS Watershed Boundary and Tribal Waterbodies

The Cocopah Indian Reservation is entirely within the U.S. Geological Survey's Yuma Desert Cataloging Unit Number 15030108 (**Figure 2**). Upstream of the Cocopah Indian Reservation is the Lower Colorado River Watershed containing the Colorado River which flows on the northern and western portions of North Cocopah and West Cocopah, respectively.

Waterbodies within the Cocopah Indian Reservation are listed below:

- Colorado River at North Cocopah
- Colorado River at West Cocopah
- East Main Canal
- Millers Slough
- Old Lagoon at North Cocopah
- Salt Brine Canal
- West Cocopah Pond
- West Main Canal

The waterbodies listed above are assessed in this report using the UWA approach.

EPA United States Environmental Protection Agency

Surf Your Watershed

WATERSHED ENVIRONMENTAL PROFILE

WATER LAND PEOPLE AIR

Locate Your Watershed

JOIN DISCUSSIONS
ADD INFORMATION
SEARCH INFORMATION
MAP LIBRARY

Yuma Desert

USGS Cataloging Unit: 15030108

Places Involving this Watershed

States:
Arizona

Counties:
Yuma

Metropolitan Areas:
Yuma

Nominated American Heritage Rivers:
None

Other Watersheds:
upstream
Lower Colorado

downstream
Lower Colorado
Tule Desert

Large Ecosystems:
Columbia River

Environmental Profile

Find general information integrated for this specific watershed

Assessments of Watershed Health

Index of Watershed Indicators (provided by EPA)
Unified Watershed Assessments (UWA) (provided by States and Tri

1998 Impaired Water (provided by EPA / State partnership)
password protected

Environmental Information

River Corridors and Wetlands Restoration Efforts
Environmental Web Sites:

- Real Time

Facilities regulated by EPA (provided by Envirofacts)

- Toxic releases (Source:TRI - Toxic Release Inventory)
- Hazardous Wastes (Source: RCRA - Resource Conservation Recovery Act)
- Superfund Sites (Source: CERCLA -Comprehensive Environmental Response, Compensation, and Liability Act)

EnviroMapper for Watersheds- (interactive mapping tool)

Water

Find information focused on water for this specific watershed

3.0 Category I through IV Waterbody Determinations

Determinations of category I through IV waterbodies within the Yuma Desert watershed are based on the best professional judgement of the Cocopah Environmental Protection Office. Assessments of ground water vulnerability are based on EPA public water system data (EPA 1992 and 1988), field studies by Cocopah Environmental Protection staff, and available literature (Jones & Stokes Associates, Inc. 1999; King *et al.* 1993; Lettieri-McIntyre and Associates, Inc. 1996; Phoenix Area Indian Health Service. 1995; Presnell Associates, Inc. 1997; SFC Engineering Company. 1991). Assessments of the pristine nature or aquatic system sensitivity of a waterbody are based on the best professional judgement of the Cocopah Environmental Protection Office.

Causes and sources of water quality impairment to Tribal waterbodies are presented in **Tables 3** and **4**. Criteria established for determining categories I through IV waterbodies are presented in **Table 5**.

Table 3. Major Causes of Beneficial Use Impairment for Tribal Waterbodies

Cause Category	Cause of Beneficial Use Impairment (✓)
Ammonia	
Cause unknown	
Chlorine	
Exotic species	✓
Filling and draining	✓
Flow alterations (minimum streamflow)	✓
Metals	✓
Nonpriority organics	
Noxious aquatic plants	
Nutrients	✓
Oil and grease	
Organic enrichment/low DO	
Other habitat alterations	✓
Other inorganics	
Pathogen indicators	✓
Pesticides	✓
pH	
Priority organics	
Radiation	
Salinity/TDS/chlorides	✓
Siltation	✓
Suspended solids	
Taste and odor	
Thermal modifications	
Total toxics	
Turbidity	
Unknown toxicity	✓

Table 4. Major Sources of Beneficial Use Impairment for Tribal Waterbodies

Source Category	Source of Beneficial Use Impairment (✓)
Point Sources	
Industrial Point Sources	
Municipal Point Sources	✓ (upstream, off-Reservation)
Agricultural Point Sources (e.g., feedlots)	
Combined Sewer Overflows	
Nonpoint Sources	
Agriculture	✓
Silviculture	
Construction	✓
Urban Runoff/Storm Sewers	
Resource Extraction	
Land Disposal	✓ (old and new landfills)
Hydromodification/Habitat Modification	✓ (Colorado River)
Contaminated Sediments	✓ (Colorado River)
Atmospheric Deposition	✓ (burning in Mexico)
Unknown Source	
Natural Sources	
Other (specify)	

Table 5. Criteria for Establishing Category I through IV Watersheds

Watershed Category	Criteria
I	Watershed has impaired beneficial uses (based on best professional judgement of the Cocopah Environmental Protection Office) or Watershed identified as needing improvements in protecting cultural beneficial uses (based on best professional judgement of the Cocopah Environmental Protection Office) or Watershed contributes to impairment of ground water used as a public water source (based on EPA Drinking Water Section data on Cocopah public water systems and best professional judgement of the Cocopah Environmental Protection Office)
II	Sufficient information is available to make a determination that the watershed is not impaired, does not need improvements in protecting cultural uses, and does not contribute to impairment of ground water used as a public water system (based on best professional judgement of the Cocopah Environmental Protection Office)
III	Watershed contains exceptionally pristine water quality (based on best professional judgement of the Cocopah Environmental Protection Office) or Watershed contains sensitive aquatic system conditions (based on best professional judgement of the Cocopah Environmental Protection Office) or Watershed contains drinking water sources (based on EPA Drinking Water Section data on public water systems and best professional judgement of the Cocopah Environmental Protection Office)
IV	Insufficient data on watershed are available to make a water quality assessment

4.0 Unified Watershed Assessment Approach and Ranking System

The UWA process was initiated by the Cocopah Environmental Protection Office on November 9, 1998 following four steps:

(1) Review water quality and land use literature for the Cocopah Indian Reservation

(2) Meet with Tribal and federal agency personnel responsible for water resources management on the Cocopah Indian Reservation

(3) Conduct a reconnaissance of Tribal waterbodies

(4) Conduct a water quality impairment evaluation for each waterbody.

The UWA is based on the following conditions:

- The UWA is to be used to acquire new federal funding under CWA Sections 106 and 319
- The UWA is not to be used for enforcement actions
- The UWA is to be modified and improved as needed based on future monitoring and assessments

Indicators of water quality impairment and non-support of beneficial uses for each waterbody are provided in **Table 6**. The ranking system presented in **Table 6** was then used to determine the extent of impairment to each waterbody.

The following waterbodies were determined to be category I:

- Colorado River at North Cocopah
- Colorado River at West Cocopah
- West Cocopah Pond

The following waterbodies were determined to be category IV:

- East Main Canal
- Miller's Slough
- Old Lagoon at North Cocopah
- Salt Brine Canal
- West Main Canal

A water quality monitoring plan is underway through the Tribe's Water Pollution Control Program to generate sufficient data to conduct a water quality assessment of all category IV waterbodies.

Table 6. Ranking System for Waterbodies with Water Quality Impairment

Rank	Parameter
One (1) point for each indicator causing water quality impairment to a waterbody	**Indicator** • Agricultural Crop Return Flows • Atmospheric Deposition • Cultural Plant Habitat Loss • Fish Consumption Advisory • Ground Water Vulnerability • Hydromodification • Nutrient Export • Plant Diversity Loss • Riparian Habitat Loss • Soil Permeability • Unknown Toxicity of a Toxicant • Wildlife Consumption Advisory
Two (2) points for each beneficial use that is determined to be non-supported in the waterbody	**Beneficial Use** • Agricultural Irrigation • Agricultural Livestock Watering • Aquatic & Wildlife (effluent-dependent water) • Aquatic & Wildlife (ephemeral) • Aquatic & Wildlife (warmwater) • Cultural/Ceremonial • Domestic Water Source • Fish Consumption • Full Body Contact • Partial Body Contact • Unique Waters

5.0 Category I Waterbody Prioritization

The UWA approach followed for the Cocopah Indian Reservation consisted of two steps:

- Categorize each waterbody within the Yuma Desert Watershed into one of four categories
- Prioritize those waterbodies in category I based on needed protection and restoration

The Cocopah Environmental Protection Office approach for prioritizing category I watersheds was to assess each waterbody with respect to the following considerations: the most needed restoration projects; ranking scores for each waterbody; and projects capable of being completed by the end of federal fiscal year 2000.

Waterbodies within the Yuma Desert Watershed, which was determined to be category I, are listed in **Table 7**. **Table 7** lists the ranking of the water quality impaired waterbodies on the Cocopah Indian Reservation as well as the restoration priority of each category I waterbody.

Table 7. Water Quality Impaired Waterbodies List

Waterbody Name	Watershed	Indicator	Beneficial Use Non-Support	Ranking Score	Restoration Priority
Colorado River at North Cocopah	Yuma Desert Watershed	(10 points) -agricultural crop return flows -cultural plant habitat loss -groundwater vulnerability -hydromodification -plant diversity loss -riparian habitat loss -soil permeability -stream channelization -unknown toxicity of a toxicant -watershed nitrogen export	(10 points) -agricultural irrigation -aquatic & wildlife (warmwater) -cultural/ceremonial -domestic water source -fish consumption	20	HIGH
Colorado River at West Cocopah	Yuma Desert Watershed	(10 points) -agricultural crop return flows -cultural plant habitat loss -groundwater vulnerability -hydromodification -plant diversity loss -riparian habitat loss -soil permeability -stream channelization -unknown toxicity of a toxicant -watershed nitrogen export	(10 points) -agricultural irrigation -aquatic & wildlife (warmwater) -cultural/ceremonial -domestic water source -fish consumption	20	HIGH
West Cocopah Pond	Yuma Desert Watershed	(3 points) -cultural plant habitat loss -plant diversity loss -riparian habitat loss	(4 points) -aquatic & wildlife (warmwater) -cultural/ceremonial	7	MEDIUM

6.0 Watershed Restoration Project Priorities

Watershed restoration projects proposed for the Cocopah Indian Reservation are prioritized below.

First Priority Watershed Restoration Project - Habitat improvements in Colorado River backwaters at North Cocopah and West Cocopah to enhance beneficial use support of fisheries, recreational uses, migratory bird flyways, and nesting for threatened & endangered species (Yuma clapper rail and willow flycatcher)

Second Priority Watershed Restoration Project - Establishment of a Tribal wetland cultural plant preserve within West Cocopah

Third Watershed Restoration Project - Removal of non-indigenous wetland plant species throughout the Cocopah Indian Reservation and replacement with native wetland plant species

7.0 References Cited

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SFC Engineering Company. 1991. Environmental Assessment for a Portion of West Cocopah in Sec 35, T-9-S, R-25-W. USDI-BIA, Fort Yuma Agency.

Appendix A

Photographs of Water Resources on the Cocopah Indian Reservation

1. Tribal logo for the Cocopah Indian Tribe. The logo displays a Cocopah fisherman, the Colorado River, and traditional structures made of wetland plants.

2. The Colorado River at North Cocopah.

3. Billy White, a Cocopah Tribal member responsible for collecting wetland plants and constructing traditional Cocopah structures for the Tribal museum.

4. A traditional Cocopah structure made using wetland plants.

5. The West Cocopah Pond with the Cocopah Environmental Protection Office Director on the right side of the photograph.

6. A Tribal well on East Cocopah with the Cocopah Environmental Protection Office Director on the left side of the photograph.